

Abstract

Bridges (10, 12, 14) are used to interconnect local area networks transparently. In the IEEE 802.1D standard for bridges, a spanning tree is built among the bridges for loop-free frame forwarding (FIG. 10). Although this approach is simple, it does not support all-pair shortest paths. A novel bridge protocol is employed that attempts to find and forward frames over alternate paths that are shorter than their corresponding tree paths on the standard spanning tree, and makes use of the standard spanning tree for default forwarding. The proposed protocol, referred to as the Spanning Tree Alternate Routing (STAR) Bridge Protocol, is backward compatible with the IEEE 802.1D standard and has a complexity that is comparable to that of the standard and other existing protocols.